CORONASTRUM LUNATUM A NEW CHLOROCOCCAL ALGA FROM INDIA

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ABSTRACT - A rare Chlorococcal alga *Coronastrum lunatum* Thompson (Chlorophyta, Chlorococcales, Scenedesmaceae) is for the first time reported from India.

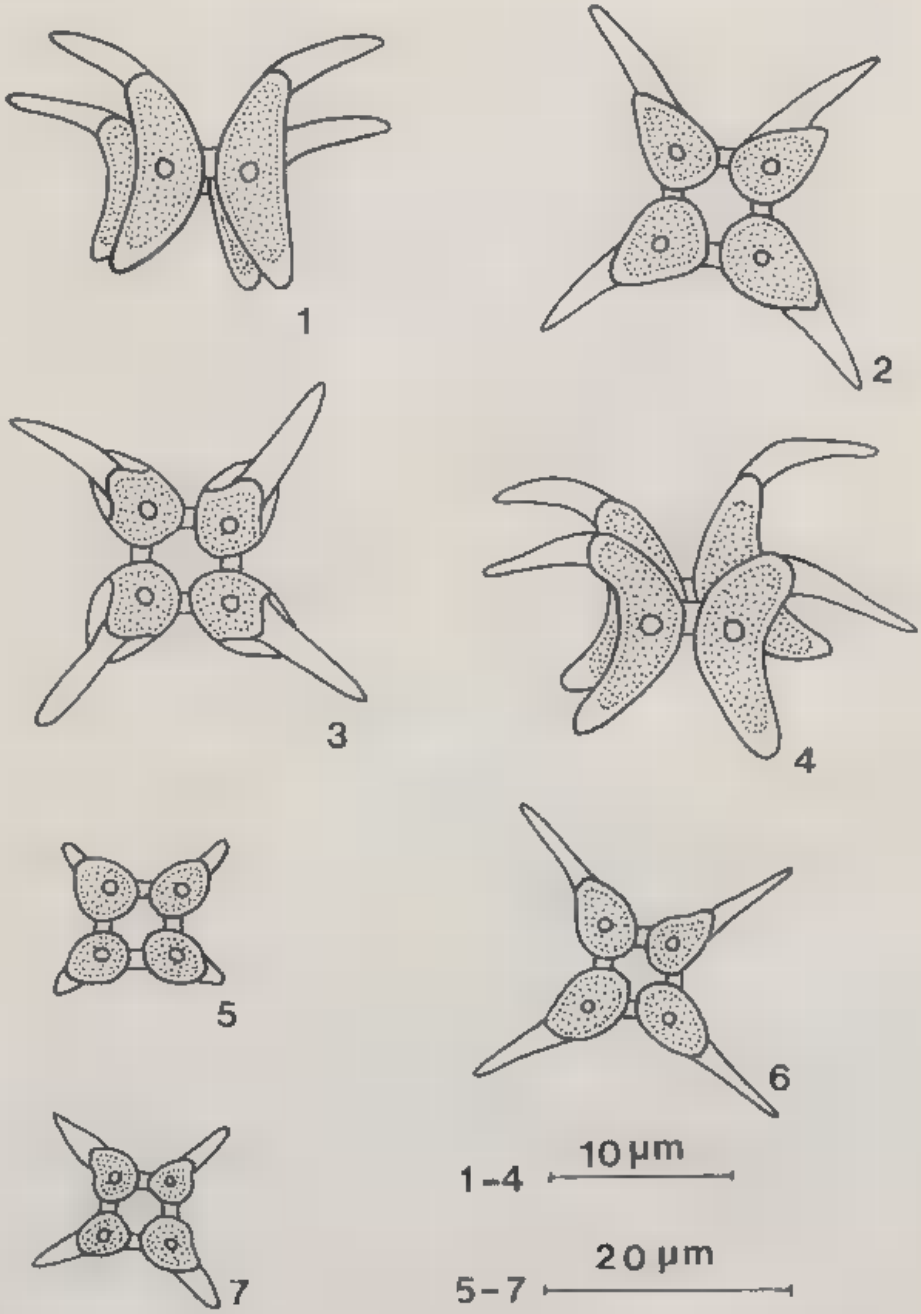
RÉSUMÉ - Une espèce rare, *Coronastrum lunatum* Thompson (Chlorophyta, Chlorococcales,Scenedesmaceae) a été rencontrée pour la première fois en Inde.

KEY WORDS : Algae, Chlorophyta, Chlorococcales, *Coronastrum lunatum*, India.

INTRODUCTION

The genus *Coronastrum* is considered to be a rare member of the family Scenedesmaceae. It was established by Thompson (1938) with a single species *C. aestivale* from Lawrence, Kansas. The genus is characterised by the colourless appendages born by the cells. The generic characters of *Coronastrum* described by Thompson (1938) were amended by Fott (1946) to include a second species, *C. ellipsoideum* Fott from Bohemia. Thompson (1950) recmended this to include a third species *C. lunatum* stating that cell shape has only specific value and no generic importance. He considered that cell shape, size and compounding of the coenobia are of specific importance. The genus was again reported by Taft in 1971. Pfiester (1977) recorded *C. ellipsoideum* from a Canadian river near Norman, Oklahoma, USA. Hindák (1977) recorded this genus from Czechoslovakia. Since then there has been no report of this genus.

The generic characters of *Coronastrum* are now based on the appendages born by the cells. The coenobia are composed of 4 cells in a flat plane. The cells are joined together by strands of cell wall substances. Each cell has a scale like fragment of mother cell wall and a parietal chloroplast with a pyrenoid. Reproduction is by autospores.



Figs. 1-7: *Coronastrum lunatum* Thompson. Figs. 1 et 4: Lateral views of coenobium. Figs. 2, 3, 5-7: Top views of coenobium (in fig. 5, a top view of a young one).

MATERIALS AND METHODS

The authors while conducting studies on the phytoplankton composition of some permanent polluted ponds of Gujarat, collected a species of *Coronastrum*, in December 1986, from a pond at Bakrol. It was again collected from a similar nearby pond at Anand in October 1987. Periodic collections were made and the nature and reproduction of the alga were studied. The collections are preserved in 4% formaldehyde and are kept in the Department of Biosciences herbarium.

OBSERVATIONS

The species consisted of 4 celled coenobia. The cells are lunate to triangular in shape with a scale like curved appendage. The cells are joined together by short and thick strands of cell wall substances. The coenobia are slightly twisted a characteristic of the genus. Each cell contains a parietal chloroplast with a pyrenoid. The reproduction is by autospore formation. The autospore formation is initiated by the division of the cell contents into four which later on mature into the autospores. The daughter coenobia contains a part of the mother cell wall.

The present algae was found growing in ponds polluted with human faecal and laundry wastes. An earlier report of this genus (Thompson, 1938) is from a similar habitat. This indicates that the genus might be prefering organically rich nutrient water. The water was alkaline with a pH around 8.

SYSTEMATIC ACCOUNT

***Coronastrum lunatum* Thompson (Fig. 1-10)**

Coenobia 4 celled with cells arranged in a flat plane. Cells lunate to triangular in lateral view and rounded in top view. Cellular appendages curved. Cells attached to one another in the median long axis by short and thick strands. Cells 5.8-18.2μm long including appendages, 4.0-4.8μm thick.

Habitat: Planktonic in a polluted pond at Bakrol. December 1986 (C. No.B.15).

DISCUSSION

According to Thompson (1950), the speciation of *Coronastrum* is based on the size, shape and compounding of the coenobia. The present taxon in cell shape closely resembles *C. lunatum*, but it differs from the latter in the nature and dimensions of the connecting strands. The connecting strands are narrow, slender and slightly long in *C. lunatum* where as it is slightly thick in

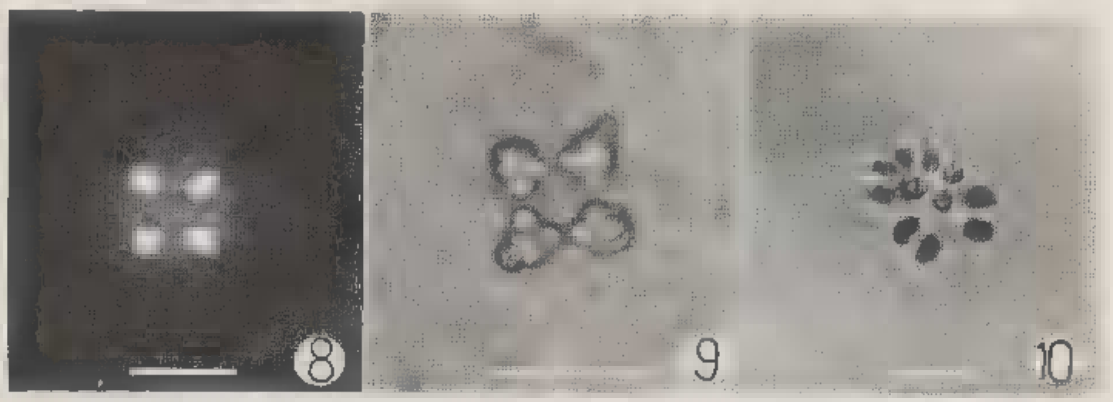


Fig. 8-10: *Coronastrum lunatum* Thompson. Fig. 8: Phase contrast picture of a coenobium from the top showing the connecting strands and appendages. Fig. 9: Autospore formation in the parent cell. Fig. 10: Liberated young coenobium. Scale bars: 10μm.

the present taxon. Hindák (1977), as mentioned by Komarek and Fott (1983), also observed similar type of thick connecting strands. He considered it as environmental influenced variation. The Indian taxon even though showed variation in the dimension of connecting strands is treated here as *C. lunatum* agreeing to Hindák (1977) view.

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